AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application. The following listing provides the amended claims with the amendments marked with deleted material crossed out and new material underlined to show the changes made.

1. (Currently Amended) A data storage structure stored on a computer-readable medium, the data storage structure ~~stores~~ storing a plurality of combinational-logic sub-networks,

wherein ~~each~~ a particular sub-network ~~performs a set of output functions and~~ comprises ~~a set of circuit elements, at least some of the sub-networks comprising~~ a first circuit ~~having a~~ for performing a first output function that produces a first result outside the sub-network and a second circuit ~~having a~~ for performing a second output function that produces a second result outside the sub-network,

wherein the first circuit directly or indirectly receives as an input the second result produced by ~~a direct or indirect input from~~ the second circuit,

wherein ~~each~~ the particular sub-network is stored based on a set of indices derived from at least the ~~set of~~ first and second output functions performed by the sub-network, the set of indices being used to retrieve the particular sub-network from the data storage structure.

2. (Currently Amended) A data storage structure stored on a computer-readable medium, the data storage structure ~~stores~~ storing a plurality of combinational-logic sub-networks,

wherein ~~each~~ a particular sub-network ~~performs a set of output functions and~~ comprises ~~a set of circuit elements, at least some of the sub-networks comprising~~ a first circuit ~~having a~~ for performing a first output function that produces a first result outside the sub-network and a second circuit ~~having a~~ for performing a second output function that produces a second result outside the sub-network,

wherein the first circuit directly or indirectly receives as an input the second result produced by ~~a direct or indirect input from~~ the second circuit,

wherein the data storage structure stores ~~each~~ the particular sub-network based on a parameter derived from at least the ~~set of~~ first and second output functions of the particular sub-network, the parameter being used to retrieve the particular sub-network from the data storage structure.

3. (Currently Amended) The data storage structure of claim 2, wherein the parameter for ~~each~~ the particular sub-network is a set of indices for storing the particular sub-network in the storage structure, wherein the set of indices includes an index for each function performed by the particular sub-network.

4. (Previously Presented) The data storage structure of claim 3, wherein the indices are numerical indices.

5. (Previously Presented) The data storage structure of claim 3, wherein the storage structure is a relational database, and the set of indices are indices into the relational database.

6. (Currently Amended) The data storage structure of claim 3, wherein the set of indices for ~~each~~ the particular sub-network includes a primary index and a set of secondary indices.

7. (Previously Presented) The data storage structure of claim 6, wherein the set of secondary indices for a sub-network that only performs one function is empty.

8. (Currently Amended) The data storage structure of claim 6, wherein ~~each~~ the particular sub-network receives a set of inputs, and ~~each~~ the particular sub-network's primary index is the index derived from a pivot function of the particular sub-network that depends on all the inputs in the particular sub-network's set of inputs.

9. (Currently Amended) The data storage structure of claim 3, wherein ~~each~~ the particular sub-network's set of indices specify the location where the particular sub-network is stored in the data storage structure.

10. (Currently Amended) The data storage structure of claim 9, wherein the data storage structure stores ~~each~~ the particular sub-network in terms of

(i) a graph that represents the topology of the set of circuits ~~elements~~ of ~~each~~ the particular sub-network, wherein the graph includes a node for each circuit ~~element~~ of the particular sub-network,

(ii) a set of local functions that includes a local function for each node of the graph,

wherein the data storage structure stores, for ~~each~~ the particular sub-network, an identifier that specifies the locations that store the set of local functions and the graph of the particular sub-network,

wherein each sub-network's set of indices is associated with the identifier for the particular sub-network.

11. (Currently Amended) The data storage structure of claim 10, wherein ~~each~~ the particular sub-network's identifier includes a graph index and a set of function indices, wherein, for ~~each~~ the particular sub-network, the graph index identifies the storage location of the graph for the particular sub-network, and each function index identifies the storage location of a local function of the particular sub-network.

12. (Currently Amended) A sub-network record management system stored on a computer-readable medium, the sub-network management system comprising:

a) a data storage structure stored on a computer-readable medium, the data storage structure ~~stores~~ storing a plurality of combinational-logic sub-networks,

wherein ~~each~~ a particular sub-network ~~performs a set of output functions and~~ comprises ~~a set of circuit elements, at least some of the sub-networks comprising~~ a first circuit ~~having a~~ for performing a first output function that produces a first result outside the sub-network and a second circuit ~~having a~~ for performing a second output function that produces a second result outside the sub-network,

wherein the first circuit directly or indirectly receives as an input the second result produced by ~~a direct or indirect input from~~ the second circuit,

wherein the data storage structure stores ~~each~~ the particular sub-network based on a parameter derived from at least the ~~set of~~ first and second output functions of the particular sub-network, the parameter being used to retrieve the particular sub-network from the data storage structure; and

b) a data access manager for identifying and retrieving ~~that identifies and retrieves~~ sub-networks from the data storage structure.

13. (Previously Presented) The record management system of claim 12, wherein when the data access manager receives a parameter, the manager searches the data storage structure for sub-networks that are stored based on the received parameter, and if the manager finds a sub-network that is stored based on the received parameter, the manager retrieves the sub-network.

14. (Currently Amended) The record management system of claim 13, wherein the parameter for ~~each~~ the particular sub-network is a set of indices for storing the particular sub-network in the storage structure, wherein the set of indices includes an index for each function performed by the particular sub-network.

15. (Canceled)

16. (Canceled)

17. (Currently Amended) The record management system of claim 13, wherein the set of indices for ~~each~~ the particular sub-network includes a primary index and a set of secondary indices.

18. (Previously Presented) The record management system of claim 17, wherein the set of secondary indices for a sub-network that only performs one function is empty.

19. (Currently Amended) The record management system of claim 17, wherein ~~each~~ the particular sub-network receives a set of inputs, and ~~each~~ the particular sub-network's primary index is the index derived from a pivot function of the particular sub-network that depends on all the inputs in the particular sub-network's set of inputs.

20. (Previously Presented) The record management system of claim 17,

wherein when the manager receives a set of indices, the manager searches the data storage structure to find a set of indices that match the received set of indices, and if the manager finds a matching set, the manager retrieves the sub-network identified by the matching set.

21. (Previously Presented) The record management system of claim 20,

wherein for each particular index pair formed by the received primary index and one of the received secondary indices,

the manager identifies each sub-network stored in the storage structure that is associated with the particular index pair,

the manager then determines whether any of the identified sub-networks are associated with all the index pairs, and

if so, the manger retrieves any sub-network that is associated with all index pairs.

22. – 24. (Canceled)

25. (Currently Amended) The data storage structure of claim 2, wherein ~~at least some~~ the particular sub-network~~s~~ perform~~s~~ at least three output functions.

26. (New) The data storage structure of claim 8, wherein the particular sub-network's set of secondary indices comprises a second index derived from an output function of the first and second output functions that is not the pivot function.

27. (New) The method of claim 1, wherein the data storage structure stores the particular sub-network when the particular sub-network does not satisfy a set of filtering rules, wherein the data storage structure does not store the particular sub-network when the particular sub-network satisfies the set of filtering rules.

28. (New) The method of claim 27, wherein the particular sub-network satisfies the set of filtering rules when the particular sub-network has duplicate output functions.

29. (New) The method of claim 27, wherein the particular sub-network satisfies the set of filtering rules when the particular sub-network comprises an input that is identical to an output function of the particular sub-network.

30. (New) A data storage structure stored on a computer-readable medium, the data storage structure storing a plurality of combinational-logic sub-networks,

wherein a particular sub-network comprises a first circuit for performing a first output function based on a plurality of inputs received by the particular sub-network and a second circuit for performing a second output function based on a set of inputs that is less than the plurality of inputs, and

wherein the particular sub-network is stored based on a set of indices comprising (i) a first index derived from the first output function and (ii) a second index derived from the second output function.

31. (New) The method of claim 30, wherein the first circuit for performing the first output function based on the plurality of inputs comprises a particular ordering for the plurality of inputs.

32. (New) The method of claim 31, wherein the second circuit for performing the second output function based on the set of inputs comprises using a subset of the particular ordering of the plurality of inputs to perform the second output function.

33. (New) The method of claim 30, wherein the second circuit for performing the second output function produces a result outside the sub-network, wherein the first circuit receives as an input the result produced by the second circuit.

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